ELSEVIER

Canadian Association of Radiologists Journal 62 (2011) 223–225

CANADIAN ASSOCIATION OF RADIOLOGISTS JOURNAL

www.carjonline.org

Canadian Residents' Corner / Coin canadien des résidents en radiologie

Case of the Month # 168: Seminal Vesicle Cysts with Ipsilateral Renal Dysgenesis

Jason R. Kovac, MSc, PhD, MD[a,*], Dimitri Golev, MD[b], Vajid Khan, MD[b], Marc Anthony Fischer, MD, FCFP, FRCSC[a]

[a]*McMaster Institute of Urology, St Joseph's Hospital, Hamilton, Ontario, Hamilton, Ontario, Canada*
[b]*Division of Radiology, McMaster University, Hamilton, Ontario, Canada*

Clinical Presentation

An otherwise healthy 36-year-old man presented to the emergency department with left-sided abdominal pain and an absence of bowel movements for the preceding 4 days. A clinical diagnosis of benign constipation was made, and the patient was discharged home. He returned to the emergency department the following day with continued abdominal pain that was now accompanied with nausea, vomiting, and fever. A surgical history of a remote appendectomy and a vasectomy 3 weeks before presentation were noted.

Given the patient's flank pain, an unenhanced computed tomography (CT) scan was obtained to rule out renal calculi (Figure 1). Initial investigations revealed normal creatinine level (62 µmol/L [60–115 umol/L]), electrolytes (potassium 4 mmol/L [3.5–5 mmol/L], sodium 135 mmol/L [135–145 mmol/L], chloride 99 mmol/L [98–107 mmol/L]), leukocyte counts (6.3×10^9/L [$4–11 \times 10^9$/L]), hemoglobin level (126 g/L [130–180 g/L]), and platelet counts (232×10^9/L [$150–400 \times 10^9$/L]). Blood and urine cultures were negative. Because of the suboptimal nature of the unenhanced CT scan, triphasic intravenous and oral contrast-enhanced CT scans of the abdomen and pelvis were obtained. Axial (Figure 2) and coronal (Figure 3) CT images in the portal-venous phase are shown. An ultrasound further clarified the diagnosis (Figure 4).

Diagnosis

Left renal dysgenesis with associated ipsilateral hydroureter and ectopic insertion into seminal vesicle cysts.

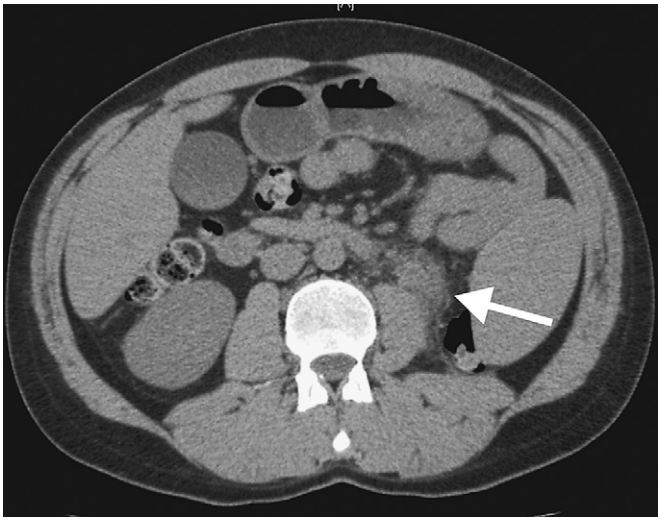

Figure 1. Unenhanced axial computed tomographic image obtained to rule out renal calculi. An atrophic left kidney is visualized with associated fat stranding possibly because of pyelonephritis.

Radiologic Findings

An unenhanced CT identified a small, dysplastic kidney in the left upper quadrant, with associated inflammatory changes and fat stranding that contributed to a differential diagnosis of pyelonephritis (Figure 1).

A triphasic intravenous and oral contrast-enhanced CT scan subsequently demonstrated an absent left renal artery, a dysplastic left kidney with associated retroperitoneal stranding and hydroureter with ectopic insertion into seminal vesicle cysts (Figures 2 and 3). Axial CT images obtained in the delayed phase could not identify contrast excretion from the left kidney (Figure 2). The right kidney was normal, with mild compensatory hypertrophy (Figure 2). The delayed-phase coronal CT images identified contrast exiting the right

* Address for correspondence: Jason R. Kovac, MSc, PhD, MD, McMaster Institute of Urology, St Joseph's Hospital, 50 Charlton Avenue East, Hamilton, Ontario L8N 4A6, Canada.

E-mail address: kovacj4@mcmaster.ca (J. R. Kovac).

doi:10.1016/j.carj.2009.12.007

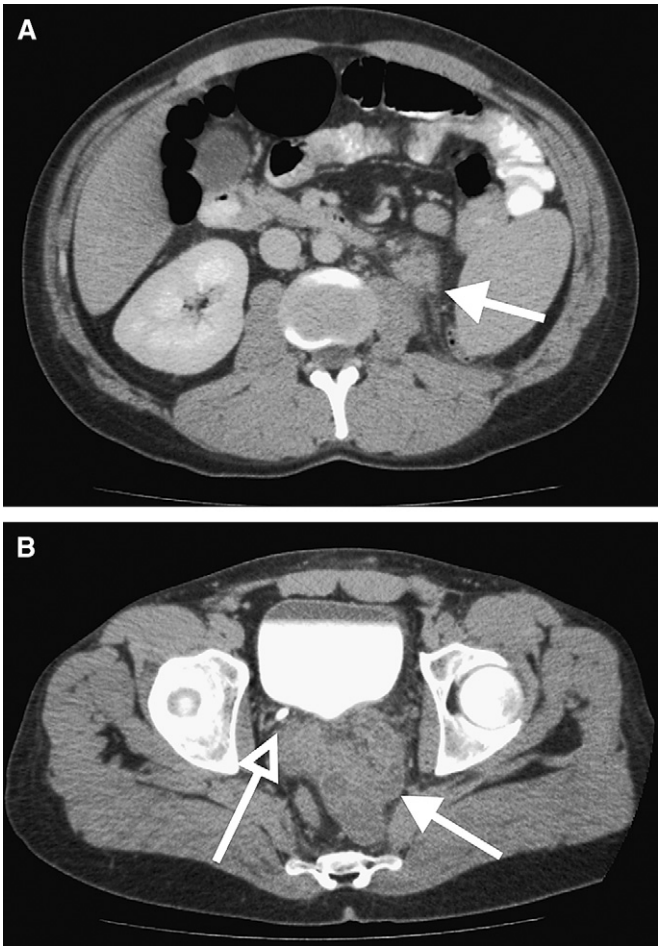

Figure 2. Enhanced axial computed tomographic images after oral and intravenous contrast obtained in the portal venous and delayed phases. (A) Normal right kidney and dysplastic left kidney (solid arrowhead), with associated retroperitoneal stranding are visualized. (B) Delayed phase shows the right ureter draining into a contrast-filled bladder (open arrowhead); large, distended seminal vesicle cysts are present posterior to the bladder (closed arrowhead).

kidney via a ureter that traveled laterally past dilated seminal vesicles and subsequently inserted into the bladder (Figure 3). A lack of contrast excretion from the left kidney was evident, with a dilated left ureter inserting into distended seminal vesicle cysts (Figure 3). An ultrasound further clarified the diagnosis of seminal vesicle cysts by identifying dilated seminal vesicles located posterior to the bladder (Figure 4).

Discussion

Seminal vesicle cysts are an anatomic curiosity that were first described and linked with renal malformations in 1914 [1]. Currently, fewer than 100 cases have been documented in the literature [2,3]. A previous study that used renal ultrasound in more than 280,000 children identified pelvic cystic dilatations associated with renal abnormalities in 0.0046%, only a portion of which were caused by seminal vesicle cysts [4].

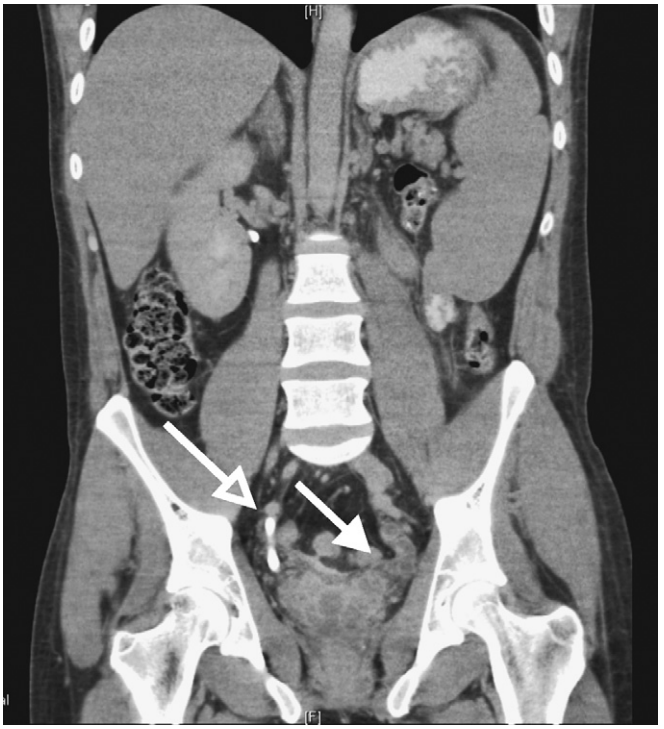

Figure 3. Coronal computed tomographic image of the abdomen and pelvis obtained in the delayed phase. The right kidney is shown with contrast exiting via the right ureter and continuing down immediately lateral to the dilated seminal vesicles (open arrowhead). A lack of contrast excretion from the left kidney along with a dilated left ureter inserting into distended seminal vesicle cysts (solid arrowhead) are shown.

The associated anomalous development of the genital and urinary tracts is caused by their common embryologic origin in general, and to alterations of the mesonephric ducts and ureteral buds in particular. Kidney development depends on the complex interplay between the ureteral bud and the mesonephric duct. The ureteral bud arises off the dorsal aspect of the distal mesonephric duct, extends cranially, and

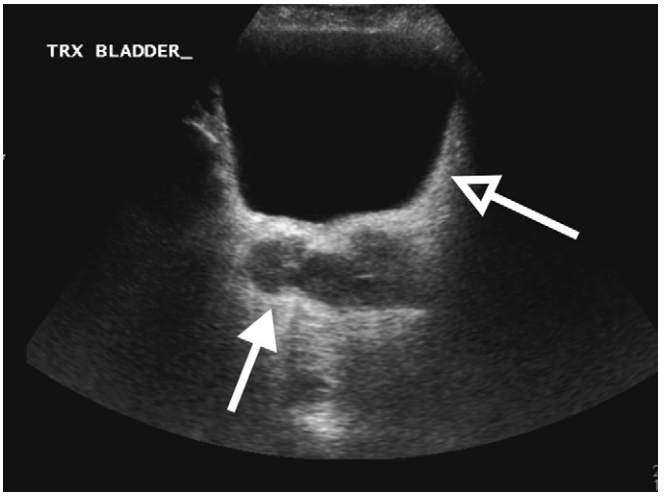

Figure 4. Axial, transabdominal ultrasound image through the urinary bladder identifies tubular structures that represent dilated seminal vesicles (solid arrowhead) located posterior to the bladder (open arrowhead).

eventually induces differentiation of the metanephric blastema: a process that results in the formation of the adult kidney. If an anomaly of the mesonephric duct occurs, it will lead to an altered or absent ureteral bud that subsequently yields renal agenesis, or dysgenesis, along with mesonephric duct anomalies such as ejaculatory duct atresia, seminal vesicle obstruction, and cyst formation [3]. If however, the mesonephric duct is normal and only the ureteral bud fails to meet the metanephric blastema, then one will have an ipsilateral renal anomaly with normal seminal vesicle development [3].

Therefore, in most cases of congenital seminal vesicle cysts, renal anomalies are present with ipsilaterally located ectopic ureters [2]. In a review of 13 cases seen from 1970–1988, the most common site of ectopia was into the seminal vesicle (58%), with insertion into the ejaculatory duct (17%), and prostatic urethra (8%) also being reported [2]. The degree of renal malformation ranged from complete agenesis (in 42%) to small amounts of renal tissue (17%) [2].

Seminal vesicle cysts may be acquired or congenital. Typically, acquired seminal vesicle cysts are bilateral and found in patients with a history of epididymitis, prostatitis, prostatic surgery, or surgeries that result in obstruction of the seminal tract [2]. Pain is typically the most common presenting symptom, however, other patients have described the occurrence of dysuria, frequency, hematuria, and, very rarely, enuresis [3]. Most patients present in the second to third decade of life when the greatest sexual activity occurs [3]. A differential diagnosis can include prostate gland cysts, bladder diverticula, or ureteroceles [5].

The exact cause of pain may be related to the mass effect, and numerous reports detail different management strategies. One report highlights a 30-year-old patient with dysuria and pain on ejaculation for 4 months [6]. In that case, aspiration via transrectal ultrasound was performed, and a follow-up at 3 months showed complete abolition of the cyst and resolution of symptoms [6]. However, transrectal aspiration only transiently relieves symptoms and is associated with recurrences and possible infections [7].

Open surgical resection has been viewed as the criterion standard to relieve pain and obstructive symptomology. It may be accomplished via transvesical, transperitoneal, retroperitoneal, or posterior transcoccygeal approaches [8]. A case report in 1995 detailed a laparoscopic excision of a seminal vesicle cyst [9], and, in 2002, Cherullo et al [8] assembled the largest series to date (3 patients) of surgically treated seminal vesicle cysts. These patients were collected over a 17-year period at the Cleveland Clinic. The mean age was 37.5 years, with 1 open and 2 laparoscopic excisions. The operative time for the laparoscopic cases was 195 minutes, with a mean estimated blood loss of 325 mL. A transperitoneal approach was used and yielded excellent visualization, a short hospital stay, and minimal postoperative pain [8]. The investigators concluded that en bloc resection of the ipsilateral seminal vesicle, cyst, ectopic ureter, and dysplastic renal tissue was the treatment of choice [8].

Conclusions

Seminal vesicle cysts with associated ipsilateral renal dysgenesis are rare. We present the case of a 36-year-old man, after a vasectomy, presenting with abdominal and flank pains. Radiologic imaging made the diagnosis, and the patient was treated with ampicillin and then discharged home. As evidenced by this report, conservative treatment of this unique condition plays an initial role in management. However, should repeated presentations occur in a patient with known seminal vesicle cysts, surgical resolution by using a transperitoneal, laparoscopic approach is likely warranted.

References

[1] Zinner A. Ein fall von intravesikaler samenblasenzyste. Wien Med Wochenschr 1914;64:605.
[2] King BF, Hattery RR, Lieber MM, et al. Congenital cystic disease of the seminal vesicle. Radiology 1991;178:207–11.
[3] Livingston L, Larsen CR. Seminal vesicle cyst with ipsilateral renal agenesis. AJR Am J Roentgenol 2000;175:177–80.
[4] Sheih CP, Hung CS, Wei CF, et al. Cystic dilatations within the pelvis in patients with ipsilateral renal agenesis or dysplasia. J Urol 1990;144:324–7.
[5] Arora SS, Breiman RS, Webb EM, et al. CT and MRI of congenital anomalies of the seminal vesicles. AJR Am J Roentgenol 2007;189:130–5.
[6] Narlawar RS, Hanchate V, Raut A, et al. Renal agenesis and seminal vesicle cyst. J Ultrasound Med 2003;22:225–8.
[7] van den Ouden D, Blom JH, Bangma C, et al. Diagnosis and management of seminal vesicle cysts associated with ipsilateral renal agenesis: a pooled analysis of 52 cases. Eur Urol 1998;33:433–40.
[8] Cherullo EE, Meraney AM, Bernstein LH, et al. Laparoscopic management of congenital seminal vesicle cysts associated with ipsilateral renal agenesis. J Urol 2002;167:1263–7.
[9] Carmignani G, Gallucci M, Puppo P, et al. Video laparoscopic excision of a seminal vesicle cyst associated with ipsilateral renal agenesis. J Urol 1995;153:437–9.